

under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 19-0036.

***Amendments***

***In the Claims:***

Please cancel claims 34-36, 44 and 47 without prejudice or disclaimer.

Please substitute the following claim 1 for the pending claim 1:

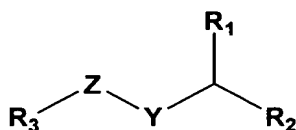
C<sup>1</sup>

1. (twice amended) A transfection particle comprising one or more nucleic acid molecules condensed by organic cationic molecules, said particle being obtained by (1) condensing said one or more nucleic acid molecules with identical or different organic cationic precursor molecules without crosslinking any of said one or more nucleic acid molecules, and (2) thereafter linking the precursor molecules to each other with one or more covalent bonds, wherein the linked precursor molecules remain condensed on said one or more nucleic acid molecules.

Please substitute the following claim 8 for the pending claim 8:

C<sup>2</sup>

8. (twice amended) The transfection particle of claim 1, wherein the organic cationic precursor molecule is represented by general formula I



(I)

wherein

$R_1$  denotes  $(C_1-C_{10}\text{-alkylene})\text{-SH}$ , wherein the alkylene radical may represent a straight chained or branched hydrocarbon;

$R_2$  denotes  $\text{-NR}_4\text{R}_5$ ,  $\text{-NHR}_4\text{R}_5^+$ ,  $\text{-N(R}_4)_2\text{R}_5^+$ ,  $\text{-C(=NR}_4\text{)NR}_5\text{R}_6$ , guanidyl, ornithylamino, or  $\text{-C(=X)-C}_1\text{-C}_{10}\text{-alkylene}$ , wherein the alkylene radical may represent a straight chained or branched hydrocarbon and may be substituted by up to four amino radicals  $\text{-NR}_4\text{R}_5$  or a thiomonosaccharide;

$R_3$  denotes  $C_5\text{-C}_{30}\text{-alkyl}$ , straight chained or branched and optionally substituted with one or more halogen atoms or dialkyl amino groups, or  $C_5\text{-C}_{30}\text{-alkenyl}$ , straight chained or branched having up to ten  $\text{C=C}$ -double bonds and is optionally substituted with one or more halogen atoms or dialkyl amino groups, or

$C_5\text{-C}_{30}\text{-alkynyl}$ , straight chained or branched having up to ten  $\text{C}\equiv\text{C}$ -triple bonds and is optionally substituted with one or more halogen atoms or dialkyl amino groups, or

$C_6\text{-C}_{10}\text{-aryl}$  optionally substituted, or

$C_7\text{-C}_{16}\text{-aralkyl}$  optionally substituted, or a

$C_5\text{-C}_{30}\text{-alkyl-chain}$  interrupted by up to 10 amino groups  $\text{-NR}_4\text{-}$  and having optionally an amino-group which is optionally substituted by an amino acid;

$R_4$ ,  $R_5$  and  $R_6$  denote independently from each other hydrogen or

$C_1\text{-C}_4\text{-alkyl}$ ;

C<sup>2</sup>

C<sup>2</sup>

X denotes O or S;  
Y denotes C=O or C=S and  
Z denotes O, S or -NR<sub>4</sub>-.

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Please substitute the following claim 9 for the pending claim 9:

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9. (twice amended) The transfection particle of claim 8, wherein the cationic precursor molecules correspond to general formula I, wherein

R<sub>1</sub> denotes (C<sub>1</sub>-C<sub>6</sub>-alkylene)-SH, wherein the alkylene radical may represent a straight chained or branched hydrocarbon;

C<sup>3</sup>

R<sub>2</sub> denotes -NR<sub>4</sub>R<sub>5</sub>, -NHR<sub>4</sub>R<sub>5</sub><sup>+</sup>, -N(R<sub>4</sub>)<sub>2</sub>R<sub>5</sub><sup>+</sup>, -C(=NR<sub>4</sub>)NR<sub>5</sub>R<sub>6</sub>, guanidyl, ornithylamino, or -C(=X)-C<sub>1</sub>-C<sub>4</sub>-alkylene, wherein the alkylene radical may represent a straight chained or branched hydrocarbon and may be substituted by up to four amino radicals -NR<sub>4</sub>R<sub>5</sub> or a thiomonosaccharide;

R<sub>3</sub> denotes C<sub>5</sub>-C<sub>20</sub>-alkyl, straight chained or branched and optionally substituted with F, Cl, Br or -NR<sub>4</sub>R<sub>5</sub>, or

C<sub>5</sub>-C<sub>20</sub>-alkenyl, straight chained or branched having up to five C=C-double bonds and is optionally substituted with F, Cl, Br or -NR<sub>4</sub>R<sub>5</sub>, or

C<sub>5</sub>-C<sub>20</sub>-alkynyl, straight chained or branched having up to five C≡C-triple bonds and is optionally substituted with F, Cl, Br or -NR<sub>4</sub>R<sub>5</sub>, or

C<sub>6</sub>-C<sub>10</sub>-aryl optionally substituted with C<sub>1</sub>-C<sub>4</sub>-alkyl, F, Cl, Br or -NR<sub>4</sub>R<sub>5</sub>, or

C<sub>7</sub>-C<sub>14</sub>-aralkyl optionally substituted with C<sub>1</sub>-C<sub>4</sub>-alkyl, F, Cl, Br or

-NR<sub>4</sub>R<sub>5</sub>, or

C<sub>3</sub> a C<sub>5</sub>-C<sub>20</sub>-alkyl chain interrupted by up to 10 amino groups -NR<sub>4</sub>- and having optionally an amino group which is optionally substituted by an amino acid;

R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> denote independently from each other hydrogen or C<sub>1</sub>-C<sub>4</sub>-alkyl;

X denotes O or S;

Y denotes C=O or C=S and

Z denotes O, S or -NR<sub>4</sub>-.

Please substitute the following claim 10 ✓ for the pending claim 10:

10. (twice amended) The transfection particle of claim 8, wherein the cationic precursor molecules correspond to general formula I, wherein

R<sub>1</sub> denotes (C<sub>1</sub>-C<sub>4</sub>-alkylene)-SH, wherein the alkylene radical may represent a straight chained or branched hydrocarbon;

C<sup>4</sup> R<sub>2</sub> denotes -NR<sub>4</sub>R<sub>5</sub>, -NHR<sub>4</sub>R<sub>5</sub><sup>+</sup>, -N(R<sub>4</sub>)<sub>2</sub>R<sub>5</sub><sup>+</sup>, -C(=NR<sub>4</sub>)NR<sub>5</sub>R<sub>6</sub>, guanidyl, ornithylamino, or -C(=X)-C<sub>1</sub>-C<sub>4</sub>-alkyl, wherein the alkyl radical may represent a straight chained or branched hydrocarbon and may be substituted by up to four amino radicals -NR<sub>4</sub>R<sub>5</sub>, or a thiomonosaccharide;

R<sub>3</sub> C<sub>5</sub>-C<sub>12</sub>-alkyl, straight chained or branched and optionally substituted with F, Cl, Br or -NH<sub>2</sub>, or a

C<sub>5</sub>-C<sub>15</sub>-alkyl chain interrupted by up to 7 amino groups -NR<sub>4</sub>- and having optionally an amino group which is optionally substituted by the amino acid cysteine;

C<sup>4</sup>  
R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> denote independently from each other hydrogen or methyl, ethyl, propyl, iso-propyl, n-butyl, iso-butyl or tert-butyl;

X denotes O or S;

Y denotes C=O or C=S and

Z denotes O, S or -NR<sub>4</sub>-.

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Please substitute the following claim 11 for the pending claim 11:

11. (twice amended) The transfection particle of claim 8, wherein the cationic precursor molecules correspond to the general formula I, wherein

C<sup>5</sup>  
R<sub>1</sub> denotes -CH<sub>2</sub>-SH;

R<sub>2</sub> denotes -NH<sub>2</sub>, -NH<sub>3</sub><sup>+</sup>, -C(=N<sup>+</sup>H<sub>2</sub>)NH<sub>2</sub>, guanidyl, ornithylamino, or -C(=O)-C<sub>1</sub>-C<sub>4</sub>-alkyl straight chained or branched and optionally substituted with F, Cl, Br or -NH<sub>2</sub>, or an ornithine radical or a S-galactosyl radical;

R<sub>3</sub> denotes a C<sub>6</sub>-C<sub>15</sub>-alkyl radical straight chained or branched and optionally substituted with F, Cl, Br or -NH<sub>2</sub>;

Y denotes C=O;

Z denotes O or -NH-.

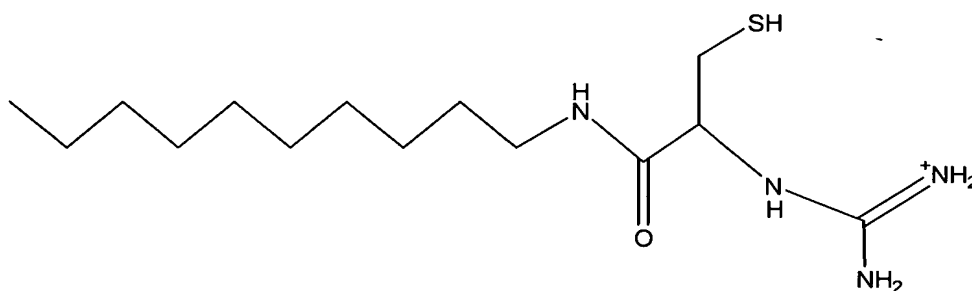
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Please substitute the following claim 12 for the pending claim 12:

C<sup>6</sup> 12. (twice amended) The transfection particle of one of claims 8 to 11,  
wherein R<sub>2</sub> is guanidine or ornithylamino.

Please substitute the following claim 15 for the pending claim 15:

15. (once amended) The transfection particle of claim 14, wherein the cationic molecule has the following formula:

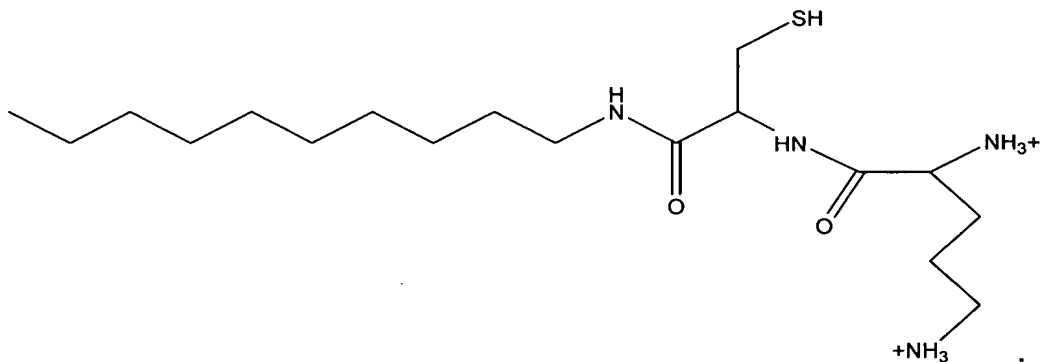


Please substitute the following claim 16 for the pending claim 16:

C<sup>8</sup> 16. (once amended) The transfection particle of one of claim 8 to 11,  
wherein R<sub>1</sub> is a methylenethiol, R<sub>2</sub> is an ornithylamino, R<sub>3</sub> is a decane, Y is a carbonyl, Z  
is an amine, and pharmaceutically acceptable salts thereof.

Please substitute the following claim 17 for the pending claim 17:

17. (once amended) The transfection particle of claim 16, wherein the cationic molecule has the following structure:



Please substitute the following claim 18 for the pending claim 18:

C<sup>10</sup>

18. (once amended) The transfection particle of one of claim 8 to 10, wherein the monosaccharide which is bonded via a sulfur atom is selected from the group consisting of galactose, lactose, glucose, arabinose, fructose, sorbose, xylose, ribose, mannose each of them in their D- or L-form.

✓  
Please substitute the following claim 22 for the pending claim 22:

C''  
22. (thrice amended) The transfection particle of claim 1, wherein the one or more covalent bonds between the cationic molecules are degradable under reductive or slightly acidic conditions, or in the presence of enzymes.

✓  
Please substitute the following claim 27 for the pending claim 27:

C<sup>12</sup>  
27. (thrice amended) The transfection particle of claim 1, characterized in that it is linked via one or more covalent bonds to one or more members of the group consisting of protein ligands, sugar residues, fusogenic peptides, viruses, adenoviruses, and combinations thereof.

✓  
Please substitute the following claim 28 for the pending claim 28:

C<sup>13</sup>  
28. (twice amended) The transfection particle of claim 27, wherein said one or more members of the group are linked via said one or more covalent bonds to the cationic molecules.

✓  
Please substitute the following claim 29 for the pending claim 29:

C<sup>14</sup>  
29. (twice amended) The transfection particle of claim 27, wherein said one or more members of the group are linked via said one or more covalent bonds to nucleic acid binding molecules that are present in addition to the cationic molecules.



Please substitute the following claim <sup>✓</sup>30 for the pending claim 30:

C<sup>15</sup>  
30. (twice amended) The transfection particle of claim 27, wherein said one or more members of the group is a protein ligand.

Please substitute the following claim <sup>✓</sup>31 for the pending claim 31:

C<sup>16</sup>  
31. (twice amended) The transfection particle of claim 27, wherein said one or more members of the group is a sugar residue.

Please substitute the following claim <sup>✓</sup>32 for the pending claim 32:

C<sup>17</sup>  
32. (once amended) The transfection particle of claim 31, wherein the sugar residue is galactose.

Please substitute the following claim <sup>✓</sup>33 for the pending claim 33:

C<sup>18</sup>  
33. (once amended) The transfection particle of claim 31, wherein the sugar residue is mannose.

Please substitute the following claim <sup>✓</sup>37 for the pending claim 37:

C<sup>19</sup>  
37. (once amended) The transfection particle of claim 27, wherein said one or more members of the group is a fusogenic peptide.

✓  
Please substitute the following claim 38 for the pending claim 38:

C20  
38. (once amended) The transfection particle of claim 27, wherein said one or more members of the group is a virus.

Please substitute the following claim 45 for the pending claim 45:

C21  
45. (twice amended) A kit of parts comprising one or more nucleic acid molecules, one or more cationic precursor molecules, suitable buffers, and other reagents or mechanical devices that are useful for preparation or purification of a transfection particle of claim 1.

✓  
Please substitute the following claim 46 for the pending claim 46:

C22  
46. (twice amended) The kit of parts of claim 45 comprising in addition one or more members of the group consisting of nucleic acid binding molecules that are present in addition to the cationic molecules, protein ligands, sugar residues, fusogenic peptides, viruses, adenoviruses, and combinations thereof.

✓  
Please substitute the following claim 48 for the pending claim 48:

48. (once amended) A transfection particle comprising:

- C23
- a) one or more nucleic acid molecules;
  - b) identical or different organic cationic precursor molecules linked to each other via one or more covalent bonds;

C<sup>23</sup>  
wherein said precursor molecules are ionically associated with said one or more nucleic acid molecules without forming any crosslinks between said nucleic acid molecules and said cationic precursor molecules, thereby condensing said one or more nucleic acid molecules.

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